

AMENDMENTS TO THE CLAIMS :

The following listing of claims will replace all the prior version and listing of claims in the application.

CLAIMS:

1. (currently amended) A biocompatible support structure for culturing cells in three dimensions, which comprises a biocompatible and non-biodegradable polymeric material on which cells may adhere and proliferate, and which forms, when saturated in a suitable aqueous medium, a porous tridimensional sponge-like scaffold with a plurality of interconnected pores, said pores being dimensioned and distributed so that a flow of at least $0.1 \text{ ml/min}^{-1}\text{cm}^{-2}$ of an aqueous solution may circulate through said biocompatible support structure, characterized in that said polymeric material consists of a ~~cross-linked~~ cross-linked polyvinylalcohol ~~(OVA)~~ (PVA) derivatized with alkylamino groups.
2. (original) The biocompatible support structure of claim 1, wherein said pores are dimensioned and distributed so that a flow of at least $0.5 \text{ ml/min}^{-1}\text{cm}^{-2}$ of an aqueous solution may circulate through the biocompatible support structure.
3. (original) The biocompatible support structure of claim 2, wherein said pores are dimensioned and distributed so that a flow of about 1 to about $15 \text{ ml/min}^{-1}\text{cm}^{-2}$ of an aqueous solution may circulate through the biocompatible support structure.
4. (original) The biocompatible support structure of claim 1, wherein said pores have a diameter of about 100 to about 1000 μm .
5. (original) The biocompatible support structure of claim 1, wherein it comprises from about 20 to about 50 pores/ cm^2 .
6. (original) The biocompatible support structure of claim 1, wherein said cross-linked polyvinylalcohol (PVA) is derivatized by reacting its hydroxyl functions with an haloalkyl amine.

7. (original) The biocompatible support structure of claim 6, wherein said haloalkyl amine is selected from the group consisting of 2-chloroethylamine hydrochloride, chloropropyl amine, bromoethylamine and iodoethylamine.
8. (original) The biocompatible support structure of claim 1, wherein said support structure further comprises an associated polymer selected from the group consisting of polyethyleneglycol (PEG), agarose, starch, alginate, and chitosan.
9. (original) The biocompatible support structure of claim 1, wherein said support structure further comprises a bioactive molecule selected from the group consisting of: extracellular biocompatible support structure proteins, growth factors, hormones, signaling molecules, peptide binding motifs of receptors, carbohydrates, and carbohydrates derivatives.
10. (original) The biocompatible support structure of claim 1, wherein said cells consist of mammalian cells.
11. (original) The biocompatible support structure of claim 10, wherein said mammalian cells consist of human cells.
12. (original) The biocompatible support structure of claim 1, wherein said cells are selected from the group consisting of hepatocytes, cardiomyocytes, fibroblasts, osteoblasts, cancer cells, monoclonal cells, kidney cells, and pancreatic cells.
13. (cancelled)
14. (cancelled)
15. (cancelled)
16. (cancelled)

17. (cancelled)

18. (cancelled)

19. (cancelled)

20. (cancelled)